



Introduction

THE WEBERIAN PROGRAMME AND TYPOLOGY OF THE MECHANISMS OF PRODUCTION OF THE PARADOX OF CONSEQUENCES

It might seem surprising to devote a book to the unintentional and unwanted consequences of human action. It might also be asked as to why such an essay should be almost entirely devoted to Max Weber and his analysis of what he called the "paradox of consequences". Do such phenomena deserve special attention? Should they not simply be considered as unimportant residues of our fundamentally rational activity? Or are they, on the contrary, clear signs of the limits of all such rationalisations and the reefs on which they founder? And hasn't contemporary sociology already devoted sufficient attention to them ever since the famous article by Merton (1936) on *Unanticipated Consequences of Social Action* and right up until the most recent theoretical and empirical studies? I do not think so. Such a return to Weber, I feel, should tell us more about the mechanisms that generate such phenomena. In fact this essay has three objectives. It endeavours firstly to reconstruct and recreate Weber's sociology of the paradox of consequences by systematising it from various elements dispersed throughout his work. It then aims to help in the construction of a theory of how such processes are generated. Finally, it tests the explanatory power of the theory by proposing an interpretation of several enigmatic phenomena that shows how fruitful it can be.

I. OUTLINE AND PLAN OF THE WORK

The study I have undertaken in this book is in many ways an extension of conclusions of two earlier publications of mine that deal with certain aspects of the work of the master of German sociology (Cherkaoui 2003a, 2004). These earlier works did not attempt any detailed analysis of the unintended consequences that I had identified during my research. The first dealt with problems posed by the explanation of certain macrophenomena and by the necessary construction of transitional mechanisms between the micrological and macrological levels. It set out to show that Weberian theory offers more robust solutions than those proposed by rational choice theorists. The second work outlined a typology of unintended consequences that I feel is neither complete nor satisfactory.

Some questions posed by complex systems physicists during a seminar about the contributions of classical sociology to the identification and explanation of macroscopic phenomena, together with a period of re-reading of the work of the few Weberians to have called attention to these phenomena, encouraged me to look again at the detailed study of the paradox of consequences to be found in Weber's work.¹ Certain of the discussions during this academic meeting that had brought together specialists in complex systems and researchers from differing disciplinary fields in the social and human sciences convinced me of the similarity of the theoretical and epistemological problems that we all face despite the diversity of the phenomena being studied. To present their theoretical preoccupations and their basic conceptual equipment and methodology, even in a cursory form, is however sadly not possible within the scope of this introduction. Although a vital task, it is an ambitious one and would require contributions from a number of specialists who represent different scientific domains.

Let us remind ourselves, however, of some principles with which the sociologist is familiar, following the innovative studies of Boudon (1973), Schelling (1978) and Simon (1952). To begin with, the interdependence between the elements of a dynamic system can be the source of the complexity and the emergence of systemic properties that are—*a priori*—neither predictable nor deductible from a knowledge of its components alone. One part of the class of critical mass models and game theory takes us back to the nature and extent of interdependence. The fluidity of water is not deducible from the

properties of the atoms of which it is composed. The dysfunctional aspects of a bureaucracy are properties of the organisation, and not of its agents. Social norms are not explained *by* a simple addition of behaviours but from individual conduct, the problems that society members encounter and the social context. The appearance of ghettos in towns and in a more general sense the geographical distribution of populations do not follow from individual actions that are independent of each other. The tragedy of the commons analysed by Hardin (1968) and the consequences of the prisoner's dilemma game exceed and overwhelm individual intentions and motivations. They lead to a ruinous backlash, to use Hegel's dramatic metaphor. These latter two paradigmatic examples show that individuals making choices solely in terms of their own interests and ignoring cooperation create more harm together than the advantages they individually obtain. Even if these emergent properties at the systemic level were ideally explicable at the microscopic level, they are not however reducible to the status of the simple physical or social "atom".

Secondly, under certain conditions, the structure of interdependence between the elements of the system creates effects that appear uncertain although they are the product of determinist laws.² Take, for instance, Schelling's model (1972, 1978) which simulates individual segregation behaviours and their effects on the racial composition of neighbourhoods. He does not postulate the existence of any prior organisation or policy, or any economic or religious criteria. The initial population distribution of a neighbourhood, and the allocation and movement of families to occupy vacant houses based on their individual preferences is entirely random. The appearance of ghettos or of socially homogeneous islands in an equilibrium situation is the consequence of rules that define the dynamic model.

Thirdly, there is no necessary proportionality between causes and effects. In other words, the functional relations between components and variables are rarely linear and it is to be expected that the behaviour of a system will change, sometimes in a fundamental way around a critical point. The mathematical formalism that is related to dynamic systems theory is highly elaborate and assumes that functional relations are non-linear.³

Finally, artificial, natural or social systems are so complex that it becomes impossible to isolate their components for they all contribute to its behaviour. It is helpful then to model them before studying them by conducting simulation experiments with agents which might be for

example, social or economic actors, ants or even elementary physical elements.⁴ Simulation is not a magical process but a series of mental exercises, *Gedankenexperimente*, low cost thought experiments which make it possible to understand the phenomena being studied. In general, the results of the simulations at the global or macroscopic level differ from the knowledge that we have of the behaviour of the agents who constitute the system. They are often counter intuitive.

The short paper that I read at the seminar was confined to a summary presentation of the emergent effect mechanisms in Weberian sociology and the difficulties in formalising all of them. Because I was convinced of the fertility of the German sociologist's theoretical and historical analyses and their vital contribution in making intelligible these paradoxical phenomena that are encountered in virtually all spheres of human activity, I have undertaken a systematic study of their sources. As the project began to take on a form, it seemed ever more clear that these enigmatic mechanisms were as much of a challenge for Weber as they are for us, and for anyone who wishes to think about rationality and more generally the immediate or distant consequences of any activity.

The first two chapters of this work are concerned with a brief pre-Weberian history of the theory of unintended consequences and the conceptual analysis of the Weberian terms that are linked to these phenomena. In the historical analysis in the first chapter I am only concerned with those predecessors to whom Weber makes explicit reference, and who opened up the subject for him.⁵ The reader will thus be able to appreciate his decisive contribution. The second chapter puts forward a systematic study of the semantics of the concept of the paradox of consequences and its correlates, principally that of elective affinity which is so often misunderstood because of one of its connotations. An examination of the Weberian corpus allows us to date the appearance of the concept in the sociological development of the German sociologist and to explain the reasons for its use by him.

Chapters 3 to 7 each deal with one of the five mechanisms for the production of the unintentional, unexpected and sometimes unwanted consequences that make up the typology set out below. Chapter 8 is designed as an application of a reconstructed and systematised Weberian theory, and in it I outline an explanation of Islamic fundamentalism, a challenge to sociology, a fascinating enigma for which the explanations suggested so far are not in my view very satisfactory. Chapter 9 is the last and is mainly devoted to the emergence of social

order from individual actions and to the solution of problems of transition between the micrological and macrological levels of reality. This question is at the heart of explanation in the social sciences, and my objective is to compare Weberian theory with rational choice theory.

If I have allotted a central role to expected utility theory this is because the undoubted hold it now has over all the social sciences, and which it claims to be able to unify. Its power derives from a simple and robust axiomatic system, from the deductions that it allows and the effective explanation of many classes of phenomena that are intolerant of either vague notions or black boxes. Rational choice theorists also have the aim of unifying the many small-scale sociological theories that do not have a general scope. They want to show that the solutions suggested by both the holistic paradigm—which includes functionalism and normative theories—and the middle-range theories such as that of relative deprivation, are if they are not simply incorrect, at least inadequate and that they can be usefully replaced by those that can be deduced from the axiomatic system of expected utility theory. It will be understood then why I have thought it useful and even necessary to compare the explanatory power of Weberian theory with that of this seemingly powerful system, a comparison which constitutes an essential stage in any research within the social sciences.

While it is true that unintended effects concern all types of action they do, however, pose more of a problem for purposively rational actions than for those which are more concerned with axiological rationality. This is because axiologically rational acts are related only to ultimate values, and they are often executed without regard to the consequences that they have for the actor or the other, and thus their often unexpected nature does not represent a problem either for the sociologist or the actor. It is of little concern that the act may backfire on whoever took the decision to act and will destroy him, from the point at which he decides to follow the ethic of the Sermon on the Mount, and which he accepts as an ultimate value that provides meaning to his life. Someone who acts axiologically will frequently encounter consequences that are sometimes at variance with the values that have presided over his interpretation of the world, his decisions and his actions. Everybody knows that evil things can be the result of good intentions, but also that they may, inversely, lead to good outcomes. I will also examine the answers that monotheism and various theodicies have given to this enigma and also to their resounding failure in the face of incalculable consequences.

It is, however, an entirely different matter for the actions that are concerned with instrumental rationality. They imply, on one hand, that the conformity between means and ends should in principle be well defined as well as consistently observed, and they postulate on the other hand that the consequences of his actions will be taken account of in the actor's reckonings. Why do such actions lead on occasion to effects that are not intended and often unwanted? I will examine the still-pertinent answers given by the master of German sociology to this question.

The objective of this work cannot be reduced to its purely historical aspects, since history is here considered from both the historiographical and the epistemological standpoints. It is admittedly a systematic review of the past, but it has also and more particularly the objective of identifying and defining programmes, theories and concepts. It demonstrates their development and internal coherence and proposes an analysis of the contexts in which they were produced. Above all else history is, in the eyes of the author of the *General Economic History* as it is in mine, a source of inspiration and of new ideas.

The aim of this study cannot be limited to its historical aspects alone. It also sets out to be a contribution to the resolution of some sociological problems. Through the reconstruction of Weberian theory and the analyses of logical structures that it puts into operation, my purpose is to explain phenomena that present challenges to both sociology in particular and the social sciences in general. They are the multiple expressions of the central problem of the emergence of social order from individual actions. The complexity of the problem is such that we cannot expect a single theory to be able to make sense of regularities of behaviour, cooperation, collective beliefs, value-selection, norms, rituals and organisations. The example of an outline for the interpretation of Islamic fundamentalism in Chapter 8 is eloquent in this regard.

There is every reason to distrust those partisans of a system who claim to have the key to all problems, but which in the last account is no more than a magic formula. The patient scientific programme developed by the sociological tradition, continually reformulated and enriched by new concepts and models is extended and exemplified in those studies that take the complexity of reality seriously, rather than trying to mould it in a Procrustean bed.

II. TYPOLOGY OF SOURCES FOR THE EMERGENCE OF UNANTICIPATED CONSEQUENCES

The typology I have proposed of the mechanisms of production of these phenomena is not the result of the combination of the *a priori* taxonomic principles that Weber would have identified and codified. It begins with the patient analysis of empirical cases that are found within different Weberian studies. As a result it should perhaps have concluded my essay rather than introduce it. By placing it at the very beginning of my work, it justifies a pedagogical structure that leads me progressively from the simplest to the most complex example. It is a sort of Ariadne's thread for the reader that will make it easier to find a route through the labyrinth of the German sociologist's writings. I have devoted chapters 3 to 7 to an analysis of each of the five types that comprise the taxonomy

The first type follows from a mismatch between the means employed and the ends pursued in a purposively rational action. If, then, there is ignorance or error, the predictions are likely to be wrong and the consequences of action unexpected, and the more so the further they are from the objectives of the agent, such that cumulative processes may appear between this failure and other unexpected effects that are due to the four other sources. The problem posed by the insufficient information about the world available to the actor, and the inherent difficulties involved in the calculations that he must make in a very short time frame imposes heavy costs on him which motivate him to adopt "second order" rational procedures such as imitation or tradition.

Moreover, once there is a loop between the information—never pure or perfect—that is available to the actor about the world and his decisions, the emergence of identical effects is to be expected, to the extent that all human behaviour and social systems are open-ended. This property is not inherent in the first source, and it overhangs them all. In such a case prediction is, strictly speaking, impossible. We are able to predict the future states of systems correctly as long as we have available the laws and theories that describe and explain the logical relations between the phenomena, assuming that the system is really *closed* or that the hypothesis of its closure is a rational one, that is to say that it is closed to any external influence or interference that would risk disturbing its functioning. However, such a condition of closure is rarely satisfied in respect of individual behaviour or social systems.⁶

The second source is derived from the structure of interdependence between actors although their decisions and actions may be rational. Interdependence is not defined as a single reciprocal face-to-face influence between two actors A and B. Nor is it, as temporal causality would imply, the effect of A on B and the delayed effect of B on A, as a retroactive mechanism. Interdependence is the mechanism that describes the fact that at the moment when actor A decides his strategies, he takes into account the possible strategies adopted by actor B and vice-versa. It also means that an action by A will have repercussions on B even if A and B do not know it. A or B can be one or more agents.⁷ This is the case with exchange, the division of labour, almost everything that happens in a market, friendship, cooperation, conflict, organisations, and in short all phenomena where there is a probability that social agents will direct their actions in relation to the past, present or future actions of others. The two unexpected effects of the structure of interdependence I will analyse are the routinisation of charisma and the emergence of systems of norms. The study of these two examples will help me to make intelligible the phenomenon of Islamic fundamentalism that is discussed in Chapter 8.

The third source appears when action spills over the boundaries of the domain of activity in which it is thought to apply, despite a good match between means and ends. This overflow should not be understood in the same sense as an *intentional transfer* of concepts, of analytic principles or of techniques from one sphere of activity to another that happens because of their success, as would be the case where models are transferred from one science to another. This third source of unwanted effects concerns more precisely the ramification of properties or elements between spheres of activity endowed with autonomous or intrinsic rationalities. The examples that most interested Weber are the extension of the rationality of religion and of science to other spheres of activity such as the economy, the transformation of Calvinist theology into a morality, the unwanted and unforeseen influence of the Protestant ethic on the development of the natural sciences, the unexpected effects of Protestantism on democracy or the phenomena of secularisation, and the influence of rampant bureaucratisation in so many domains. Why did scientific rationality spill over from its context, and why did science disenchant the world and lead to intellectualism? Why, paradoxically, did the great reformers such as Luther and Calvin who were so suspicious of certain scientific discoveries, help to encourage scientific

research through their teachings? Why did puritanism, an eminently elitist religious doctrine, so strongly contribute to the institutionalisation of democracy? These are some of the problems posed by this third source.

The fourth source is the result of the appearance of a conflict between the rationalities of different spheres that are each endowed with relatively autonomous logics. The rationalisation of an activity because of its own logic and thus its relative autonomy, may conflict with that of another and equally autonomous activity. What may seem rational in one may appear irrational in the other. If then rationalisation is only a point of view, conflicts may emerge between domains that are equally rational, although they may be so to different degrees and in differing ways. This is the case with the pairings formed by religion and the economy, religion and politics, politics and the economy, to take only a few examples. There is no reason why the relations between the protagonists of the two spheres, which constitute the elements of these pairings, should not lead to contradictions that produce unforeseen consequences. Thus a rational bureaucracy develops as an unwanted consequence in modern democratic societies. The progressive autonomisation of the logic of each sphere also helps us to construct some hypotheses of a Weberian and Durkheimian nature to help understand some forms of Islamic fundamentalism.

Finally, the fifth source is an outcome of the sudden emergence of new values during the processes surrounding the carrying out of a decision which creates a conflict with the values on which it is based. This latter source can be simplified down to the insoluble conflict between irreconcilable values such as those of the fraternity of universalist religions, and those relative to the economic interests of agents in a capitalist system. A further example of irreducible conflict is the confrontation between the revolutionary ambitions of the prophet or political leader and those of his supporters and the agents of the bureaucracy whom he needs and without whom no action is possible. There is no doubt this is the mechanism that most preoccupied Weber and which produced the most important developments in his thinking. The antagonism of values is rife among all activities but it also dominates each of them. The pluralism of values is a fact of life that cannot be ignored, as Weber never ceases to remind us. This antagonism leads to a paradox of consequences that a number of systems of thought such as monotheism, the theodicies, monist philosophy and

science, have all tried in vain to resolve. The pluralism of values is also concerned with the problem of relativism that Weber rejects on the basis of logical and historical arguments.

These five pure types have the potential, of course, of creating combinations between themselves and thus producing mixed forms that are frighteningly complex to analyse.

There is a striking family likeness between this typology and that of Merton (1936) even if the American sociologist does not explicitly acknowledge this heritage.⁸ When Merton writes about the consequences of intentional action, he really means those that result from the action, that is, those that would not have occurred if the action had not taken place. For Merton, studying the consequences of intentional action does not presuppose that action is or should be rational, or in other words that it is not necessary to assume that individuals always use the most appropriate means for achieving their objective. Part of his analysis consists of identifying those elements that account for the differences between real action and rational action. Rationality and irrationality should not be identified with, respectively, success and failure.

Merton also distinguishes between five reasons for the appearance of unintended consequences. I will begin with one that is exactly the same as the first source in the Weberian typology. It is concerned with the level of relative knowledge, or ignorance, that the actor has when he takes a decision and acts, for no actor has access to perfect and full information. This cognitive deficiency is of two types. The first is concerned with the quantity of information that the actor has available. It might be to a lesser or greater extent rich and comprehensive. In principle, the fuller the knowledge the actor has of the relations between phenomena, the more likely it will be that his prediction will be correct. Inversely, the more it is poor and incomplete, the more likely it is that predictions relating to the consequences of his action will be inadequate and often wrong. The second is due to the nature of the social sciences. Insofar as the relationships between variables in these sciences are of a stochastic nature, and can never be of a strictly nomological order, then a logical relationship between actions and its outcome cannot be expected and one can never, as a result, predict with certainty the theoretically possible consequences of an action. It may well be that the same consequence will not always be the outcome of the same action, or that different consequences follow from the same action.

The second is the error that may concern as much the evaluation of the situation as the use we make of it to define the objective or the choice of the type of action to employ, and finally the employment of the action itself. It cannot be certain that the distinction between this second source and the first is highly relevant and it is understandable, therefore, why Weber does not use it.

The third is the urgency of immediate interests which matches up with the extension of this domain according to Weber—*though only in part*. This urgency makes the actor focus his attention on the immediate consequences of his action and excludes at the same time his assessments of other results that may follow from the same action. Adam Smith's "invisible hand" is of course the best known example of this case. By using his capital in the most efficient and profitable manner for him, the actor will at the same time increase the domestic product of society, a consequence that was not at all part of his intentions. Using the Weberian analyses for his own purposes, Merton points out that as long as action does not take place in a social or psychological vacuum, its effects may sometimes ramify and extend to other spheres than those envisaged by the actor. The legislator who wants to protect tenants by indexing rents against criteria such as incomes and the cost of construction, or worse still, by freezing them, must expect both predictable phenomena that result from his legislation on the nature and supply of rented property and some unintended and unwanted consequences such as an increase in age of marriage, reduction in fertility rates and in the urban population's rate of growth.

The fourth refers to values in the Weberian sense, that Merton analyses in a less elaborate manner than Weber. Activities that are value-oriented set off processes that react in such a manner that they change the scale of the values that were their origin and cause. By taking into account only what he considers to be his duty, the believer flouts the other objective consequences of his action. This type is closely related to Weberian axiological rationality.

The fifth and last type is the self-destructive prediction or what Venn called a "suicidal prophecy". (Venn, 1888) Occasionally a prediction that is based on a sound theory does not happen. This is not because it is false or because the probability of its achievement is almost nil, but because it becomes a part of the concrete situation that is taken into account by public policy decisions so as to eliminate the negative effects. Let us take as an example the Marxist prediction of the progressive concentration of capital and pauperisation

of the proletariat. Leaving aside the problem of whether this proposition is deducible or not from a theory, and whether it conforms or not to reality, I propose to accept, following the example of the trade unions, that it is true. At the end of the nineteenth century the Marxist prediction was indeed part of the reality as understood by the unions, and it influenced their actions to ensure that such a pauperisation would never take place. The consequence of such a process is that workers did not experience pauperisation, contrary to the prediction.⁹

A similar idea, although differently formulated and of great theoretical power is one of the central themes of an essay by Hirschman (1977, 130–131) which argues that in addition to the study of unanticipated consequences of achieved actions (one of the axes of the programme of the social sciences), it is important not to neglect the “study of results that will never occur”. It is true, as Hirschman argues, that Weber had:

[...] spelled out one of those remarkable unintended effects of human actions [...] whose discovery has become the peculiar province and highest ambition of the social scientist since Vico, Mandeville, and Adam Smith. Now I submit [...] that discoveries of the symmetrically opposite kind are both possible and valuable. On the one hand, there is no doubt that human actions and social decisions tend to have consequences that were entirely unintended at the outset. But, on the other hand, these actions and decisions are often taken because they are earnestly and fully expected to have certain effects that then wholly fail to materialize. The latter phenomenon, while being the structural obverse of the, former, is also likely to be one of its causes; the illusory expectations that are associated with certain social decisions at the time of their adoption help keep their real future effects from view.

Hirschman’s position is understandable, though it is the reverse of that of Weber, who argues that the “diffusion of capitalist structures is in large part the result of the search for a means of avoiding the collapse of society, during an epoch when its very foundations were constantly under threat by the insecurity of the conditions under which internal and external order were maintained.” Was capitalism something desired by society’s members? Nothing could be less certain. A clear answer to this question is outlined at the end of this essay.

As we see the two typologies share a number of points in common. It is not too surprising that this is the case. Not only had Merton read Weber's work, but he also used this in the construction of theories of the middle range. Let us note finally that Merton (1936 [1976], 145, note 3) was most probably the first to have noted Weber's use of the expression "*Paradoxie der Folgen*", that he had noted on several pages from the German original of *Economy and Society*.¹⁰ We will see, however, that the Weberian analysis goes much further than Merton's general considerations.

In this essay I propose to analyse the most pertinent examples of each mechanism, and the other cases will be referred to in the notes so as not to burden the exposition unnecessarily. These examples are, in all truth, so numerous, and the social and historical contexts to which they refer so varied and different, that it would not be absurd to use them as real samples that open the way to generalisations and thus offer empirical tests of Weberian hypotheses. In any event, I consider them to be more than simple illustrations.

I could not conclude this introduction without expressing my gratitude to all of those who were so kind as to read part or all of the manuscript and suggest some changes to improve its content. My thanks go in particular to Raymond Boudon who had the great patience to follow the different versions of each of the chapters, and gave me the benefit of his immense scholarship. The comments of Gianluca Manzo, and Denis Phan who were also kind enough to read the whole manuscript, were instrumental in helping me with the re-writing of several chapters and I hope the clarification of my general argument, as well as enriching the examples used in the work. My thanks also go to Massimo Borlandi, Alban Bouvier, Adil Hajji, and Philippe Steiner for their critical reviews and helpful advice, and to Giovanni Busino and Max Engammare who agreed to publish the original French manuscript after they had given it a careful and helpful reading.

NOTES

1. See in particular Merton (1936), Boudon (1977), Freund (1979), Schluchter (1979), McIntosh (1983). The general topic of the research seminar of the Centre National de la Recherche Scientifique, organised at Agay in 2004 by Denis Phan and Gérard Weisbuch, was concerned with the models, concepts and methods relating to the dynamics of complex systems and their applications in the human and social sciences.

2. This property is, it would seem, a limiting case as Phan (2004) suggests, particularly in relation to his discussion of the model developed by May, Novack and Phan (2002, 255 et sq.) which summarises these problems. In fact, in the majority of models of complex dynamics, uncertainty is a fundamental factor either as a sign of our ignorance or as an intrinsic property of phenomena. Users of simulation models know that the selection of units, their movement or displacement are uncertain, as is the case with the segregation models devised by Schelling (1972) which are familiar to sociologists. One interpretation of uncertainty in economics is the trembling hand theory which is an extension of game theory. Developed by R. Selten (1975) it is based on the idea that game players commit errors at the moment of choosing their equilibrium strategies, for they sometimes play a different strategy than the one they intended to play and have a low probability of choosing any of the strategies that would not lead to the realisation of equilibrium.
3. Gradual local change that is perceived as such by the observer may suddenly become qualitative around a critical point. On this point, see Galam (1982) (2004).
4. See on this the work of Weisbuch (1989), Axelrod (1997), Gilbert (1999) and Phan (2004).
5. Despite the fact that Weber must surely have been familiar with the contributions of Leibniz and Malebranche on the problem of unintended consequences, he does not mention them apart from a very brief reference to Leibnizian theodicy in his "Anticritical Last Word on *The Spirit of Capitalism*" (Weber 1978 [1910]).
6. In order to clarify these ideas, consider for example the predictions of the positions of the planets in the solar system. They are based on laws and the theory of motion and gravity, but also on prior empirical data. Such predictions will only be exact if the system in question is not disturbed by external interference. Since this hypothesis cannot be deduced from laws and theory, it will logically have to be taken into consideration. I will return to the analytic structure of Weber's work in Chapter 3 and will compare it with that of Pareto, following in this case Steiner (2003)
7. The problem of interdependence has been clearly identified and analysed in depth in the contemporary sociological literature. The work of Boudon (1979) and Coleman (1990, 20) is particularly helpful in this regard. Interdependence is the structure of interaction that engenders macrosociological phenomena. Macrophenomena, which are emergent effects, can be distinguished from the resulting phenomena, and these latter are nothing other than the sum of independent individual actions. On this point see Cherkaoui (1998, 2003b).
8. There is no doubt whatever, in my view, of the influence of Weber on Merton. The American sociologist drew greatly upon Weber's subject areas and analyses for works as diverse as his thesis about Puritanism and the development of science in the 17th century, and his studies of bureaucracy. In one of his last publications, Merton (1998) seemed to believe that the continuing interest of sociologists in unintended and unanticipated consequences was due to his work, and considered that the contributions of his predecessors in economics

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and sociology were negligible. Coming from a man whose intellectual honesty was unquestionable, this claim seems hardly believable unless we recall that Merton's short study (1936) was read far more by sociologists than the works of theoreticians of this class of phenomena.

9. The increasing pauperisation of the proletariat thesis was in fact the one that Bernstein (1899) attempted to test. He thought he had been able to establish through statistical data that wages increase and that there was also a tendency for mass consumption to grow.
10. I would point out in passing that Merton shows that he was also aware of Wundt's term "heterogony of ends", in the same note 3 of page 145 that I refer to in chapter 1. Merton writes, "Some of the terms by which the whole or certain aspects of the process have been known are: Providence, (immanent or transcendental), *moira*, *Paradoxie der Folgen*, *Schicksal*, social forces, heterogony of ends, immanent causation, dialectical movement, principle of emergence and creative synthesis."